INSTALLATION INSTRUCTIONS

89301 Rev D

For Rancho Suspension Systems:

RS66301B - Fits vehicles equipped with factory steel control arms

RS66302B - Fits vehicles equipped with factory aluminum control arms

2014 GMC Sierra / Chevy Silverado 1500 4WD

— FMVSS 126 Certified —

Front Driveshaft Replacement Recommended. Use Powertrain Industries P/N 3194-9827. See Important Note P (page 4).

Fits OE 17" and up rims and spare
ONLY WITH OE TIRES and ¼" wheel spacer

BFG KM2 LT325/60R20 Tires
20 x 9-in +10 offset wheels

WARNING

Carefully read, understand and follow the instructions provided in this manual, and keep it in a safe place for future reference. If you have any doubt whatsoever regarding the installation or maintenance of your Rancho suspension system, please see your retailer for assistance or advice. Failure to follow the warnings and instructions provided herein can result in the failure of the suspension system, or can cause you to lose control of your vehicle, resulting in an accident, severe personal injury or death.

These instructions should remain in the vehicle glove box for future reference.

⚠ WARNING: READ ALL INSTRUCTIONS THOROUGHLY FROM START TO FINISH BEFORE BEGINNING INSTALLATION. Failure to follow the warnings and instructions provided herein can result in an accident, severe personal injury or death.

PRELIMINARY

This manual presumes that all persons installing this suspension system have a high level of mechanical training and experience, and have available to them all necessary tools and safety equipment. This manual is not and should not be construed as an exhaustive list of all required safety measures. Personnel should rely primarily on their training and experience, as well as on their own common sense.

This Manual is to be read as a supplement to, and must not be construed as a substitute for, the owner's manual and/or shop manual that originally accompanied the vehicle. Refer to such use, operation, maintenance and safety manuals as necessary, and especially after installation is complete, to insure proper vehicle operation.

The following terminology has been used in this Manual:

I. **ACCIDENT:** Any event which could cause personal injury or death to anyone installing or using the suspension system, as well as to passengers and bystanders, or otherwise may result in property damage.

PRE-INSTALLATION WARNINGS and INSTRUCTIONS

⚠ WARNING: Only the following rim/tire sizes may be used with this suspension system: LT325/60R20 tire, 20 x 9-in +10 offset wheel.

Use of any other rim/tire combination increases the risk of a roll-over and/or accident, resulting in severe personal injury or death.

⚠ WARNING: This suspension system will enhance the off-road performance of your vehicle. It will handle differently; both on and off-road, from a factory equipped passenger car or truck. Failure to drive this vehicle safely may result in serious injury or death to the driver and passengers. ALWAYS WEAR your seat belts, REDUCE your speed, and AVOID sharp turns and other abrupt maneuvers.

1) Service and repair tasks require specialized knowledge, training, tools, and experience. General mechanical aptitude may not be sufficient to properly install this suspension system. If you have any doubt whatsoever regarding your ability to properly install the suspension system, please consult a qualified mechanic.

2) Your brake lines and fuel lines should remain undisturbed during and after installation. If you think you need to modify these components in any way, you are mistaken. You are installing the lift improperly and will be creating a significant risk of an accident. In case of any doubt, consult a qualified mechanic.

3) If any component does not fit properly, something is wrong. You are installing the lift kit improperly and will be creating a significant risk of an accident. Never modify any component of the vehicle or suspension system, except as instructed herein. Do not continue with installation until you have identified the problem.

4) Several of the procedures described herein require at least two (2) persons to safely complete the task. If you have any doubt about your ability to complete any operation by yourself, always ask for help from a qualified assistant.

5) Before starting any operation, confirm that all personal safety devices and safety equipment are in proper condition and position.

6) Give your work undivided attention. Looking around, carrying on a conversation and "horse-play" are careless acts that can result in an error in installation and/or serious injury.

7) Install only tires approved by the United States Department of Transportation ("DOT approved"). Make sure the rim and tire size are properly matched.

8) If any components of the vehicle or suspension system are damaged in any way during installation, immediately replace the component.

9) During installation, carefully inspect all parts of the vehicle and replace anything that is worn or damaged.

10) Nip points present the risk of the catching, lacerating, crushing and/or amputating fingers, hands, limbs and other body parts during operations. Always keep clear. Wear protective gloves.

11) Oil and hydraulic fluids are poisonous, dangerous to health and are known to the State of California to cause cancer, birth defects or other reproductive harm. Do not inhale vapors or swallow. Do not allow contact with the eyes or skin. Should any oil or fluids be swallowed or inhaled or come into contact with the eyes, immediately follow the safety precautions on the label or call a poison control center immediately. Should any of the oil or fluids contact your skin, immediately wash thoroughly.

12) Never install the suspension system if you are under the effects of alcohol, medications and/or drugs. If you are taking prescription or over the counter medication, you must consult a medical professional regarding any side effects of the medication that could hinder your ability to work safely.

WARNINGS AND INSTRUCTIONS AFTER INSTALLATION

13) After installation is complete, drive the vehicle slowly in an area free from heavy traffic for at least three (3) miles. Likewise, before traveling on any highways or at a high rate of speed, drive the vehicle for ten (ten) miles on side roads at moderate speed. If you hear any strange noise or feel unusual vibration, if a component of the suspension system is not operating properly, or if any warning lights illuminate or buzzers sound, stop the vehicle immediately. Identify the cause and take any necessary remedial action.

14) Confirm that all components of the vehicle, including all lights (headlights, turn signals, brake lights, etc.), linkages (accelerator, etc.), electrical switches and controls (windshield wipers and defoggers, etc.), and other warning devices (low tire pressure monitoring systems) are fully operational.

15) Your headlights will need to be readjusted before the vehicle is used on the roads. Consult the vehicle owners' manual.

16) The speedometer and odometer will need to be recalibrated after installation. See your dealer.

17) Confirm proper rear view and side view while seated in the driver seat. Install supplemental mirrors as necessary.

18) Your original low tire pressure monitoring system may be re-installed in your new wheels. However, if you choose to purchase a new system, see your dealer to have them properly calibrated. Proper tire pressure is critical to safe operation of the vehicle.

OPERATION

19) Because it has been modified, the vehicle will not handle, turn, accelerate or stop in the same manner as an unmodified vehicle. In addition, the crash protection systems designed in the vehicle may operate differently from an unmodified vehicle. For example, turning and evasive maneuvers must be executed at a slower rate of speed. Further, there is a greater risk that the vehicle could roll over. These differences could result in an increased possibility of an accident, personal injury or death. Learn the vehicle's operations and handling characterizes and drive accordantly.

IMPORTANT NOTES

A. Before installing this system, have the vehicle's alignment and frame checked by a certified technician. The alignment must be within factory specifications and the frame of the vehicle must be sound (no cracks, damage or corrosion).

B. The components of Rancho's suspension system are designed as a single integrated system. To avoid compromises in terms of safety, performance, durability or function, do not substitute Rancho components with components manufactured by other companies. Use of other components will result in the forfeiture of any type of warranty on the vehicle/suspension system. New Rancho shock absorbers are required and must be purchased separately.

Front	Rear
Reuse OE Strut	RS999297
With	RS7297
Spacer RS176714	RS5297

C. Do not powder-coat or plate any of the components in this system. To change the appearance of components, automotive paint can be applied over the original coating.

D. Each hardware kit in this system contains fasteners of high strength and specific size. Do not mix hardware kits or substitute a fastener of lesser strength. See bolt identification table on page 4.

E. Compare the contents of this system with the parts list in these instructions. If any parts are missing, contact the Rancho Technical Department at 1-734-384-7804.

F. Install all nuts and bolts with a flat washer. When both SAE (small OD) and USS (large OD) washers are used in a fastener assembly, place the USS washer against the slotted hole and the SAE washer against the round hole.

G. Apply a drop of thread locking compound to all bolts during installation. ⚠ CAUTION: Thread locking compound may irritate sensitive skin. Read warning label on container before use.

H. Unless otherwise specified, tighten all nuts and bolts to the standard torque specifications shown in the table on page 2. USE A TORQUE WRENCH for accurate measurements.

I. Some of the service procedures require the use of special tools designed for specific procedures. The following tools and supplies are recommended for proper installation of this system: If you do not know how to safely use any of these tools, stop the project and consult a qualified mechanic.

- ☐ Chevrolet Service Manual
- ☐ Kent-Moore Puller J-24319-B
- ☐ Kent-Moore J-42188-B Ball Joint Separator
- ☐ Kent-Moore Ball Joint Separator Tool J-43631
- ☐ Kent-Moore Adapter J-45851
- ☐ Die Grinder
- ☐ Drill motor
- ☐ Assorted Drills: 1/8" through 1/2"
- ☐ Torque Wrench (250 FT-LB capacity)
- ☐ 1/2" Drive Ratchet and Sockets

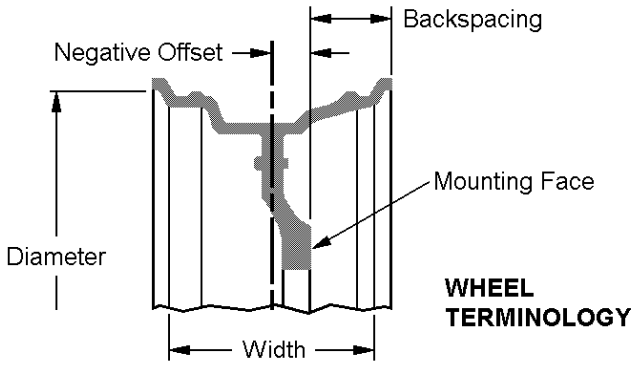
- ☐ Assorted Combination Wrenches
- ☐ Heavy Duty Jack Stands
- ☐ Wheel Chocks (wooden blocks)
- ☐ Hydraulic Floor Jack
- ☐ Center punch
- ☐ File
- ☐ Reciprocating Saw (to modify frame)
- ☐ Hammer
- ☐ Wire Brush (to clean bracket mounting surfaces)
- ☐ Silicone Spray Lubricant
- ☐ Brake fluid
- ☐ Tape Measure
- ☐ Safety Glasses (wear safety glasses at all times)

J. It is extremely important to replace coil springs, CV flanges, and front drive shaft/pinion relationships as original. Be sure to mark left/right, front/rear, and indexing of mating parts before disassembly. A paint marker or light colored nail polish is handy for this.

K. Suspension components that use rubber or urethane bushings should be tightened with the vehicle at normal ride height. This will prevent premature failure of the bushing and maintain ride comfort.

L. The required installation time for this system is approximately 5 to 6 hours. Check off the box (☐) at the beginning of each step when you finish it. Then when you stop during the installation, it will be easier to find where you need to continue from.

M. This suspension system was developed using the following tire & wheel combination: LT325/60R20 BFGoodrich KM2 tire, 20 x 9-in +10 offset wheel. Maximum total backspacing is 6.9". Before installing any other combination, consult your local tire and wheel specialist. OE wheels 17" and larger will fit this suspension system ONLY with OE tires and ¼" front wheel spacer RS176737

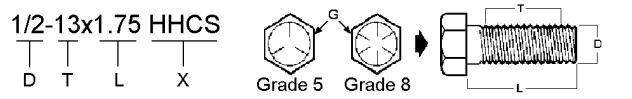


N. Important information for the end user is contained in the consumer/installer information pack. If you are installing this system for someone else, place the information pack on the driver's seat. Please include the installation instructions when you finish.

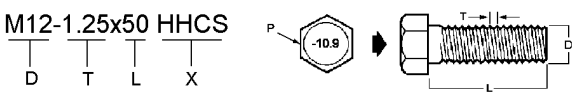
O. The lifespan of Rancho products depends on many factors. Improper use, abuse or harsh use in general may compromise the integrity of the suspension system and significantly reduce its lifespan. The suspension system is also subject to wear over time. Have the suspension system regularly inspected and maintained by qualified mechanics. If the inspection reveals any damage or excessive wear, no matter how slight, immediately replace or repair the component. The suspension system must be regularly maintained in order to optimize its safe and efficient use. The more severe the conditions under which the suspension system is operated, the more often it must be inspected and maintained.

P. If front driveline vibration is present, replace front driveshaft with Powertrain Industries double kardan front driveshaft P/N 3194-9827.
powertrainindustries.com, 1-800-798-4585

STANDARD BOLT TORQUE & IDENTIFICATION						
INCH SYSTEM			METRIC SYSTEM			
Bolt Size	Grade 5	Grade 8	Bolt Size	Class 9.8	Class 10.9	Class 12.9
5/16	15 FT-LB	20 FT-LB	M6	5 FT-LB	9 FT-LB	12 FT-LB
3/8	30 FT-LB	35 FT-LB	M8	18 FT-LB	23 FT-LB	27 FT-LB
7/16	45 FT-LB	60 FT-LB	M10	32 FT-LB	45 FT-LB	50 FT-LB
1/2	65 FT-LB	90 FT-LB	M12	55 FT-LB	75 FT-LB	90 FT-LB
9/16	95 FT-LB	130 FT-LB	M14	85 FT-LB	120 FT-LB	145 FT-LB
5/8	135 FT-LB	175 FT-LB	M16	130 FT-LB	165 FT-LB	210 FT-LB
3/4	185 FT-LB	280 FT-LB	M18	170 FT-LB	240 FT-LB	290 FT-LB



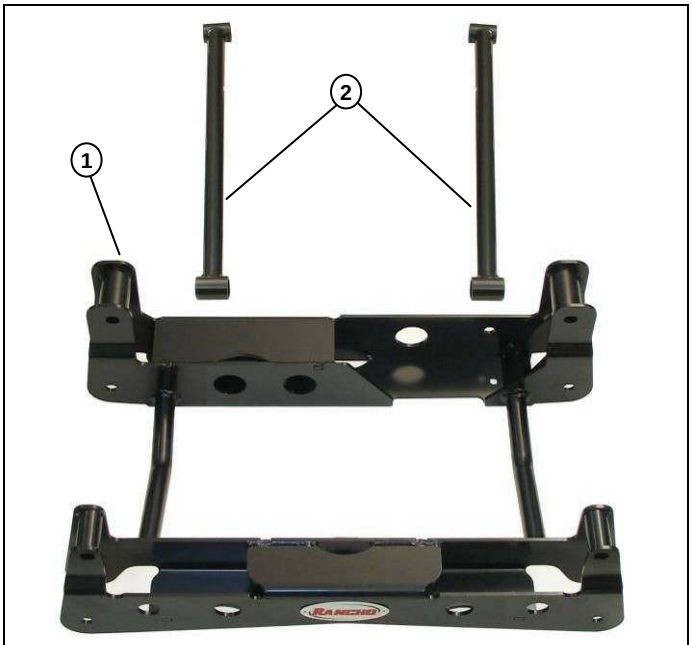
G = Grade Marking (bolt strength)
D = Nominal Diameter (inches)
T = Thread Pitch (threads per inch)
L = Length (inches)
X = Description (hex head cap screw)



P = Property Class (bolt strength)
D = Nominal Diameter (millimeters)
T = Thread Pitch (thread width, mm)
L = Length (millimeters)
X = Description (hex head cap screw)

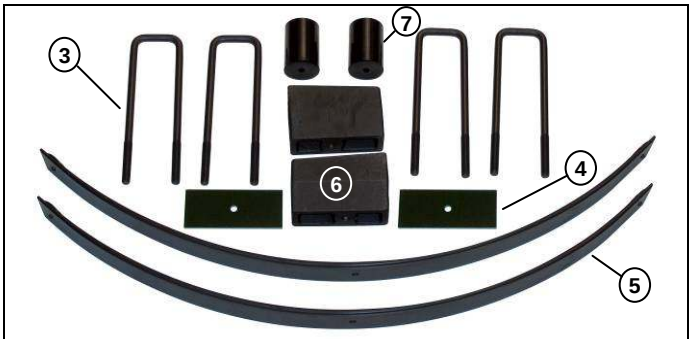
The driver of this suspension system recognizes and agrees that there are risks inherent in driving a vehicle with a lifted suspension system, including but not limited to the risk that you could be involved in an accident that would not occur in an unmodified vehicle. By his/her purchase and use of this suspension system, the user expressly, voluntarily and knowingly accepts and assumes these risks, and agrees to hold Tenneco, Inc. and its related companies harmless to the fullest extent permitted by law against any resulting damages.

Box 1 of 5



ITEM	PART #	DESCRIPTION	QTY
1	RS176709B	Subframe	1
2	RS176132B	Aft Brace	2

Box 3 of 5



ITEM	PART #	DESCRIPTION	QTY
3	RS740014	U-Bolt 9/16-18 X 13.0	4
	RS8051	Hardware Kit -5/8" Pin	1
	RS10490	Pin .625 X .875	2
	RS8102	Hardware Kit - 9/16	1
	RS7737	Nut, 9/16-18 Nylock	8
	RS7738	Washer, 9/16 SAE	8
4	RS176719	Leaf Shim	2
5	RS331	Add-A-Leaf	2
	RS860185	Hardware Kit - Add-A-Leaf Install	1
	RS770076	HHCS, 3/8-24 X 7.5	1
	RS770025	Nut, 3/8-24 Hi-Nut	1
	RS860410	Hardware Kit - Center Bolt	1
	RS770091	Bolt C-Bolt 3/8-24	2
	RS770025	Nut, 3/8-24 Hi-Nut	2
	RS860569	Hardware Kit - Rear Brake	1
	RS770127	HHCS, M8-1.25x20mm	1
	RS770128	Washer, M8	1
	RS7698	HHCS, 5/16-18 X 1.25	1
	RS7712	Nut, 5/16-18 Toplock	1
	RS7642	Washer, 5/16 SAE	2
	RS170014	Brake Line Bracket	1
6	RS15080	Block, 4" x .625 Hole	2
7	RS176477	Rear Bumpstop Spacer	2
	RS860582	Hardware Kit - Rear Bump Stp	1
	RS770157	SHCS, M10-1.5x110mm	2
	RS770081	HHCS, M8-1.25X10mm	1
	RS603508	Washer, 3/8 SAE	2
	RS603525	Lockwasher, M10	2

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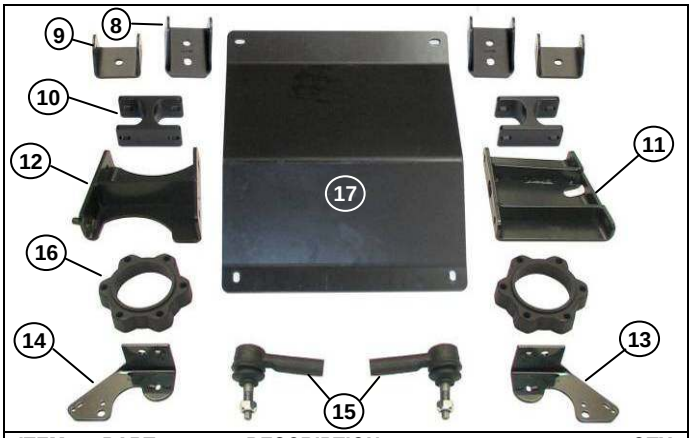

ITEM	PART #	DESCRIPTION	QTY
	RS860546	Hardware Kit - Subframe	1
	RS770040	HHCS, M16-2.0x140mm	2
	RS7861	Washer, M16	8
	RS770030	Nut, M16-2.0 Stover	4
	RS770140	HHCS, M16-2.0x120mm	2
8	RS176138	Rear Aft Brace Bracket	2
9	RS176160	Front Aft Brace Bracket	2
	RS860474	Hardware Kit - Aft Brace	1
	RS420072	Sleeve, .750 X 2.74	4
	RS520041	Bushing	8
	RS603616	HHCS, 1/2-13 X 4.0	4
	RS603605	HHCS, 1/2-13 X 1.0	2
	RS78361	Nut 1/2-13 Stover	4
	RS7723	Washer, 1/2 SAE	10
	RS176137	Nut Bracket	2
	RS42702	.5 CC Thread Lok	1
10	RS176579	Swaybar Drop Brkt	2
	RS860743	Hardware Kit - Aft Brace Bracket	1
	RS770106	HHCS, M12-1.75 X 30MM	2
	RS7911	Nut, M12-1.75 Stover	2
	RS7915	Washer, M12	4
	RS860547	Hardware Kit - Front Sway Bar	1
	RS770080	HHCS, M10-1.50x30mm	4
	RS770064	Washer, M10	12
	RS7657	Nut, M10-1.50 Nylock	4
	RS7658	HHCS, M10-1.50x60mm	4
	RS770095	1/2" Loop Strap	2
	136763624	Tie Strap	4
	RS42702	.5 CC Thread Lock	2
11	RS176712	Left Diff Drop	1
12	RS176713	Right Diff Drop	1
	RS860550	Hardware Kit - Front Diff	1
	RS770120	HHCS, M12-1.75x50mm	4
	RS7915	Washer, M12	8
	RS7911	Nut, M12-1.75 Stover	4
	RS7719	Washer, 1/2 USS	2
13	RS176715	Brake Line Drop, Lft Fnt	1
14	RS176716	Brake Line Drop, Rt Fnt	1
	RS860738	Hardware Kit - Brake Line Drop	1
	RS7906	HHCS, 1/4-20 x 1.0	4
	RS77841	Washer,1/4 SAE	8
	RS7710	Nut, 1/4-20 Nylock	4
15	RS602617	Tie Rod End	2
16	RS176235	Axle Spacer	2
	RS860176	Hardware Kit - Axle Spacer	1
	RS7634	Washer, 3/8	12
	RS7658	HHCS, M10-1.50x60mm	12
17	RS176717	Skid Plate	1
	RS860739	Hardware Kit - Skid Plate	1
	RS770080	HHCS, M10-1.50x30mm	4
	RS770064	Washer, M10	8
	RS7657	Nut, M10-1.50 Nylock	4
	RS176718	Rectangular Washer	2
	RS860751	Wheel spacers for front OE wheels	1
	RS176737	Spacer – Front OE wheels	2
	RS860748	Vent Hose Extension Kit	1
	RS96325	Tube Fitting, Straight Barbed 3/16	1
	RS96326	Vent Hose Extension, 8.0”	1
	RS89301	Instructions RS66301B	1
	RS94180	Information Pack	1

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ITEM	PART #	DESCRIPTION	QTY
	RS176714	Shock Spacer L/R	2
18	RS860740	Hardware Kit - Shock Spacer	1
	RS770080	HHCS, M10-1.50x30mm	6
	RS770064	Washer, M10	12
	RS7657	Nut, M10-1.50 Nylock	6

Box 5 of 5

ITEM	PART #	DESCRIPTION	QTY
		RS66301B ONLY	
	RS860741	Steering Knuckle – Fits Steel Control Arms	1
19	RS176710	Knuckle, Lft - Fits Steel Control Arms	1
20	RS176711	Knuckle, Rt - Fits Steel Control Arms	1
		RS66302B ONLY	
	RS860742	Steering Knuckle – Fits Alum. Control Arms	1
19	RS176720	Knuckle, Lft - Fits Aluminum Control Arms	1
20	RS176721	Knuckle, Rt - Fits Aluminum Control Arms	1

FRONT SUSPENSION

VEHICLE PREPARATION & SWAY BAR REMOVAL

1) ☐ Park the vehicle on a level surface. Set the parking brake and chock rear wheels. Measure and record the distance from the center of each wheel to the top of the fender opening. See Illustration 1. **Record these measurements in the space provided below**.

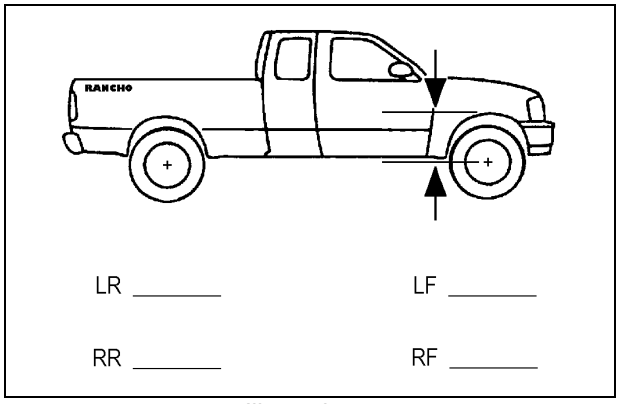

Illustration 1

2) ☐ Disconnect the sway bar from the lower control arms. Save end links for reuse.

3) ☐ Raise the front of the vehicle and support the frame with jack stands. Remove the front wheels and set them aside.

4) ☐ If applicable, remove the front skid plate and crossmember braces.

STEERING KNUCKLE, SHOCK ABSORBER, HALF SHAFT (4WD ONLY), & LOWER CONTROL ARM REMOVAL

1) ☐ Remove ABS sensor wire clips from the upper control arm and frame. Seperate the ABS sensor wire plug at the frame. Remove the brake hose / ABS wire bracket from the upper control arm, save bolt. See Illustration 2.

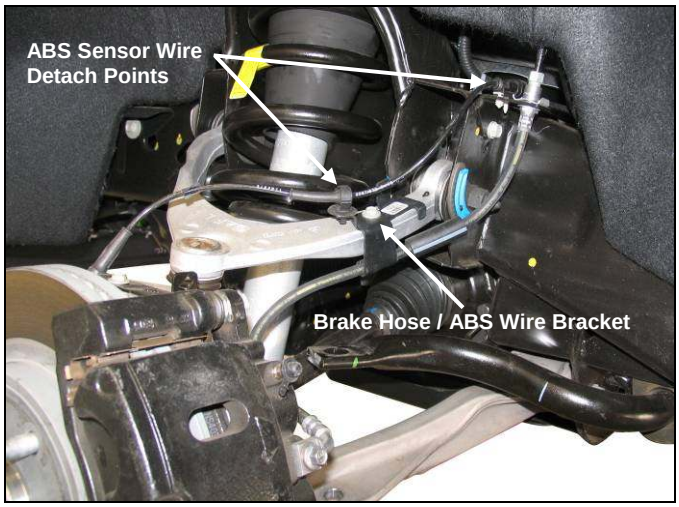

Illustration 2

NOTE: For vehicles equipped with Electronic Suspension Control (Autoride), separate brake hose from sensor link bracket.

2) ☐ Remove the brake caliper anchor bolts. Remove the brake caliper and its mounting bracket as an assembly. Hang the caliper assembly with wire or a tie wrap.

⚠ WARNING: Do not allow the caliper to hang by the brake hose. You could damage the hose, without this damage being visible to you, resulting in sudden and unexpected brake failure and an accident.

3) ☐ Label the brake rotor left or right. Remove rotor attachment torx screw. Remove the brake rotor.

4) ☐ Remove hub dust cap carefully using a small chisel and hammer to separate the edge of the cap from the hub. Work around the outer edge of the cap where it meets the hub.

5) ☐ Remove the axle nut using a 36mm socket.

⚠ WARNING: Do not hammer the ball studs to separate them from components. You could damage the ball studs, without this damage being visible to you, resulting in sudden and unexpected failure of the ball studs and an accident.

6) ☐ Remove the nut from the outer tie rod stud. Using Kent-Moore Puller J-24319-B, separate tie rod stud from knuckle.

7) ☐ Loosen the nuts at the upper ball joint. Using Kent-Moore J-42188-B Ball Joint Separator, separate ball joints from knuckle.

8) ☐ Loosen the nuts at the upper and lower ball joints. Using Kent-Moore Ball Joint Separator Tool J-43631 and J-45851 Adapter, separate ball joints from knuckle.

9) ☐ Remove the upper and lower ball joint nuts. Carefully remove the steering knuckle.

10) ☐ Index mark the half shaft and front differential flange for installation reference. Illustration 3.

Illustration 3

11) ☐ Remove the half shaft flange bolts. Remove the half shaft.

12) ☐ Index-mark the shock absorber upper mount, coil spring, and lower mount on the outward facing side. Disconnect Electronic Suspension Control connector if applicable.

13) ☐ Remove the shock absorber lower bolts. Remove the three shock absorber upper mount to frame nuts. Remove the shock absorber and spring assembly.

14) ☐ Remove the lower control arm pivot bolts. Remove the lower control arm.

15) ☐ Repeat steps 1 through 14 for the other side.

FRONT DIFFERENTIAL REMOVAL (4WD ONLY)

1) ☐ Remove the four bolts that attach the crossmember to the lower control arm rear pockets. Remove the crossmember.

2) ☐ Using a reciprocating saw or cutoff wheel, cut off the driver side crossmember bracket 3.5" from the inside edge. See Illustration 4. File or grind sharp edges and paint exposed metal. Repeat for passenger side crossmember bracket.

NOTE: frame coating can be removed with a putty knife and solvent such as mineral spirits.

⚠ WARNING: Do not use a flame cutter or torch to remove bracket. You could warp, weaken or damage the bracket without the damage being visible to you, resulting in loss of vehicle control and an accident.

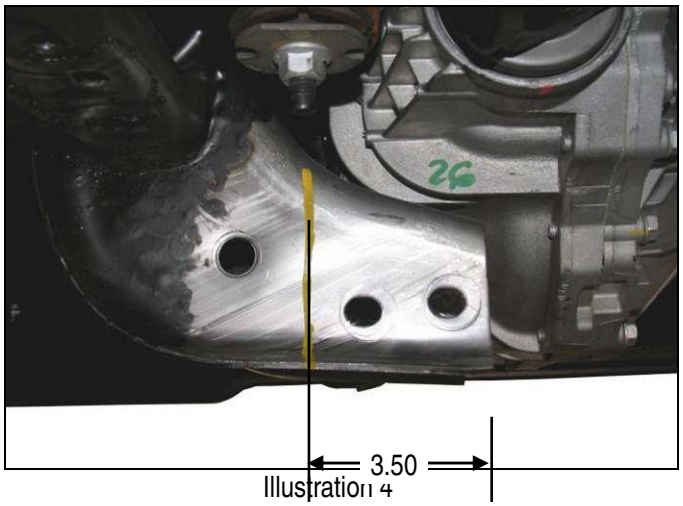

Illustration 4

3) ☐ Reference mark the front driveshaft U-joint to the differential yoke. Remove the four bolts and two retainers from the yoke and slide the shaft rearward to disengage. Tape the bearing cap assemblies and secure the shaft out of the way. See Illustration 5

Illustration 5

4) ☐ Disconnect the electrical connector from the passenger side, wiring harness from the top, and the vent hose from the driver side of the differential assembly. See Illustration 6a and Illustration 6b

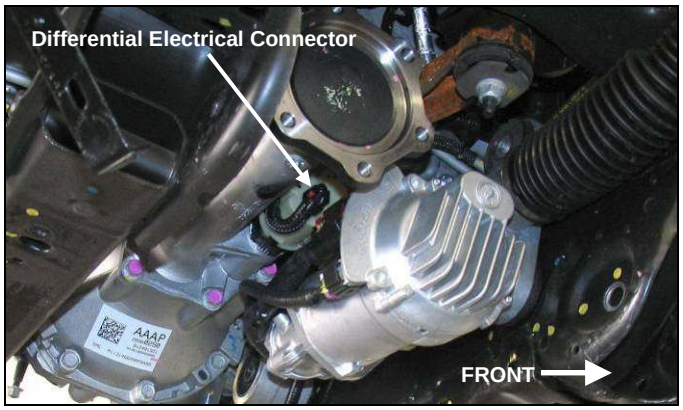

Illustration 6a

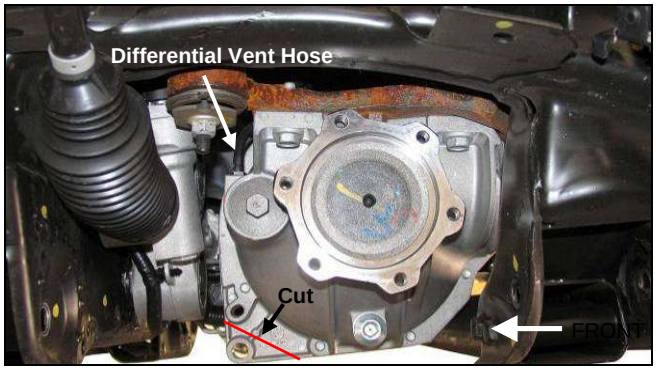

Illustration 6b

5) ☐ Support the front differential assembly with adjustable jack stands or floor jack.

6) ☐ Remove the four mounting bolts. Carefully lower and remove the front differential.

NOTE: The rear of the differential will have to be tilted down to clear the steering rack.

⚠ WARNING: Do not damage the differential solenoid, or the steering rack plugs. You could damage the harness or plugs, without this damage

being visible to you, resulting in sudden and unexpected steering failure and an accident.

7) ☐ Using a reciprocating saw or cutoff wheel, cut off the front lower flange of the differential. See Illustration 6b and Illustration 7

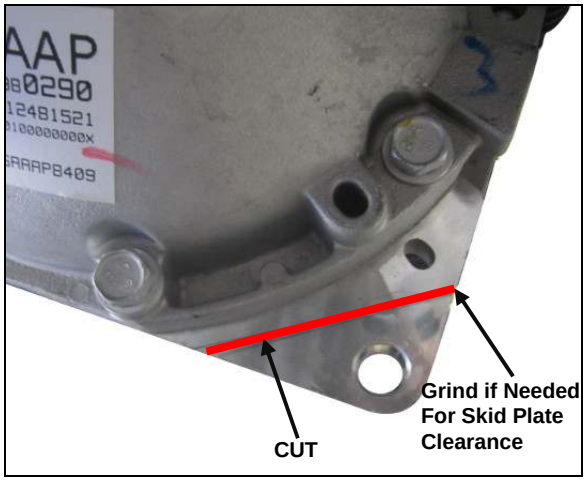

Illustration 7

FRONT DIFFERENTIAL DROP BRACKET INSTALLATION (4WD ONLY)

NOTE: When attaching differential drop brackets, face the open side of the bracket out and the larger end toward the front.

1) ☐ Attach right drop bracket RS176713 to the passenger side differential frame mount with the original hardware. See Illustration 8. Tighten nuts and bolts to 65 ft. lbs.

⚠ WARNING: Verify that the right drop bracket RS176713 or axle tube mount does not contact the steering rack or steering rack electrical connections. Failure to provide clearance could cause damage to the steering rack resulting in sudden and unexpected steering failure and an accident.

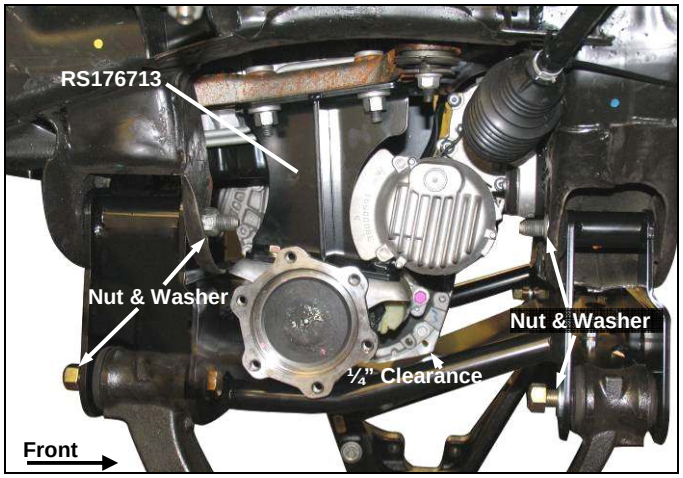

Illustration 8

2) ☐ Attach left drop bracket RS176712 to the driver side differential frame mount with the original hardware. See Illustration 9. Tighten bolts to 65 ft. lbs.

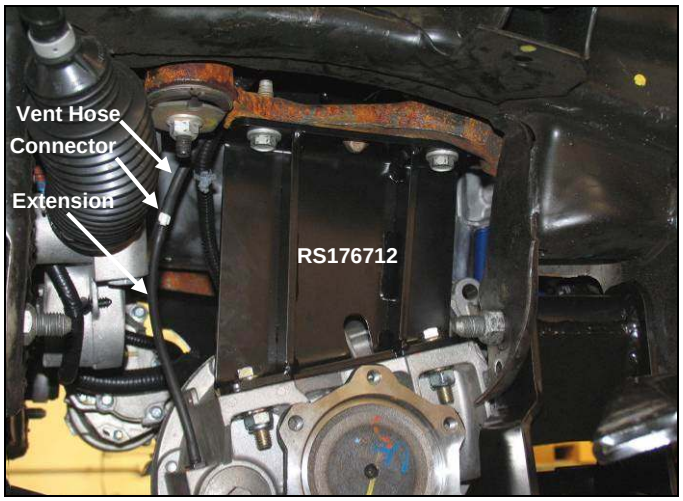

Illustration 9

3) ☐ With the help of an assistant, loosely attach the front differential to the installed drop brackets with the hardware from kit RS860550. Refer to Illustration 8 and Illustration 9. Install the larger USS washers on the passenger side axle tube mount. Tighten the nuts and bolts to 65 ft. lbs

NOTE: Verify that the front differential and axle flanges do not contact the frame bracket of the lower control arm. FAILURE TO PROVIDE CLEARANCE COULD CAUSE DAMAGE TO THE FRONT DIFFERENTIAL ASSEMBLY

4) ☐ Reattach the differential electrical connector and install vent hose extension. Use wire ties to reattach wiring harness to differential See Illustration 9 and Illustration 6

DRIVESHAFT INSTALLATION

If front driveline vibration is present, replace front driveshaft with Powertrain Industries double cardan front driveshaft P/N 3194-9827. See Important Note P (page 4).

OE Driveshaft Installation:

1) ☐ Align reference marks and reattach the front driveshaft U-joint to the differential yoke using OE retainers and bolts. Tighten bolts to 22 ft. lbs. Blue Locktite is recommended on retainer bolts

Double Cardan Driveshaft Installation:

1) ☐ Loosen the clamp attaching the slip-yoke boot to the transfer case output shaft and slide boot forward off of output shaft.

2) ☐ Slide drive shaft slip-yoke forward out of transfer case.

3) ☐ If not yet installed, install and clamp boot on new

driveshaft slip yoke. Install but do not tighten boot output shaft clamp.

4) ☐ Align one of the flat sides of the new driveshaft's center yoke with the transmission linkage cable and slide slip yoke into transfer case output shaft. See Illustration 10

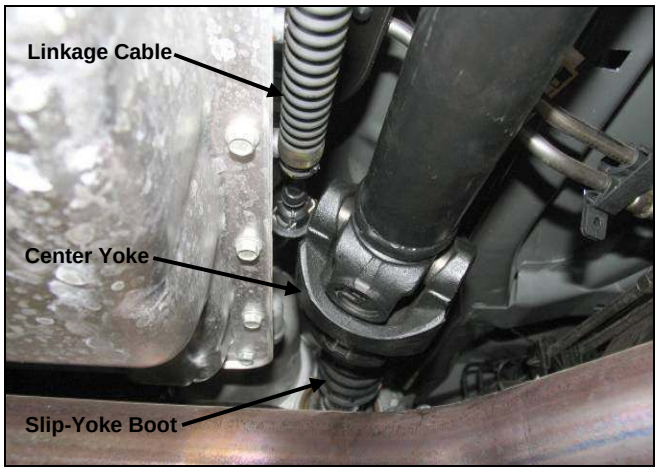

Illustration 10

5) ☐ Attach the front driveshaft U-joint to the differential yoke using OE retainers and bolts. Tighten bolts to 22 ft. lbs. Blue Locktite is recommended on retainer bolts.

SUBFRAME INSTALLATION

1) ☐ Cut 15-3/8" off the rear of the front skid plate. Attach the front of the skid plate using OE hardware. Attach the cut end of the skid plate to the frame crossmember using OE hardware and RS176718 washers. Do not re-install metal cross-braces. See Illustration 11

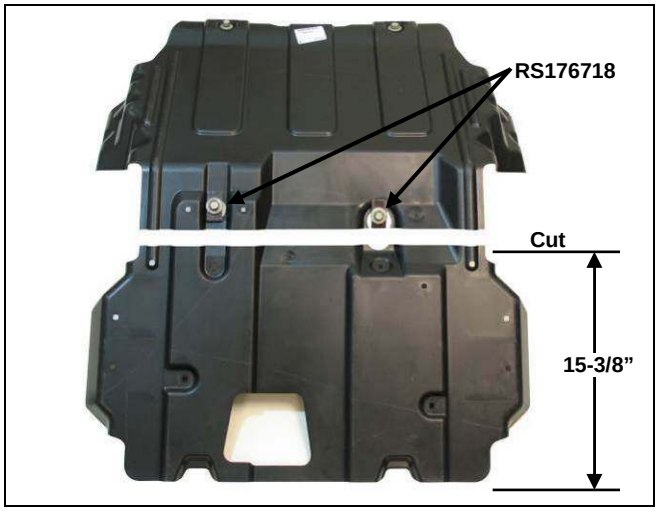

Illustration 11

2) ☐ Attach aft brace brackets RS176160 to subframe with hardware form kit RS860743. Snug but do not fully tighten. See Illustration 14

3) ☐ With the help of an assistant, raise the subframe up into the lower control arm frame brackets. Attach the subframe to the brackets with the original hardware. Insert the forward bolts from the front, and the aft bolt the rear. Install OE cone washer under nut. See Illustration 8. Tighten the subframe to bracket bolts to 107 ft. lbs.

NOTE: If subframe contacts corners of front control arm frame brackets enlarge the inside corners using a round file or die grinder, See Illustration 12. Trim skid plate more if necessary

Illustration 12

4) ☐ Install skid plate RS176717 to subframe using 10mm hardware from kit RS860739. The slots in the skid plate should be perpendicular to the slots in the subframe. See Illustration 13.

Illustration 13

NOTE: Skid plate and differential should have at least ¼" of clearance. If required, grind differential flange. See Illustration 7 and Illustration 8. Only grind protruding flange, DO NOT grind into differential housing.

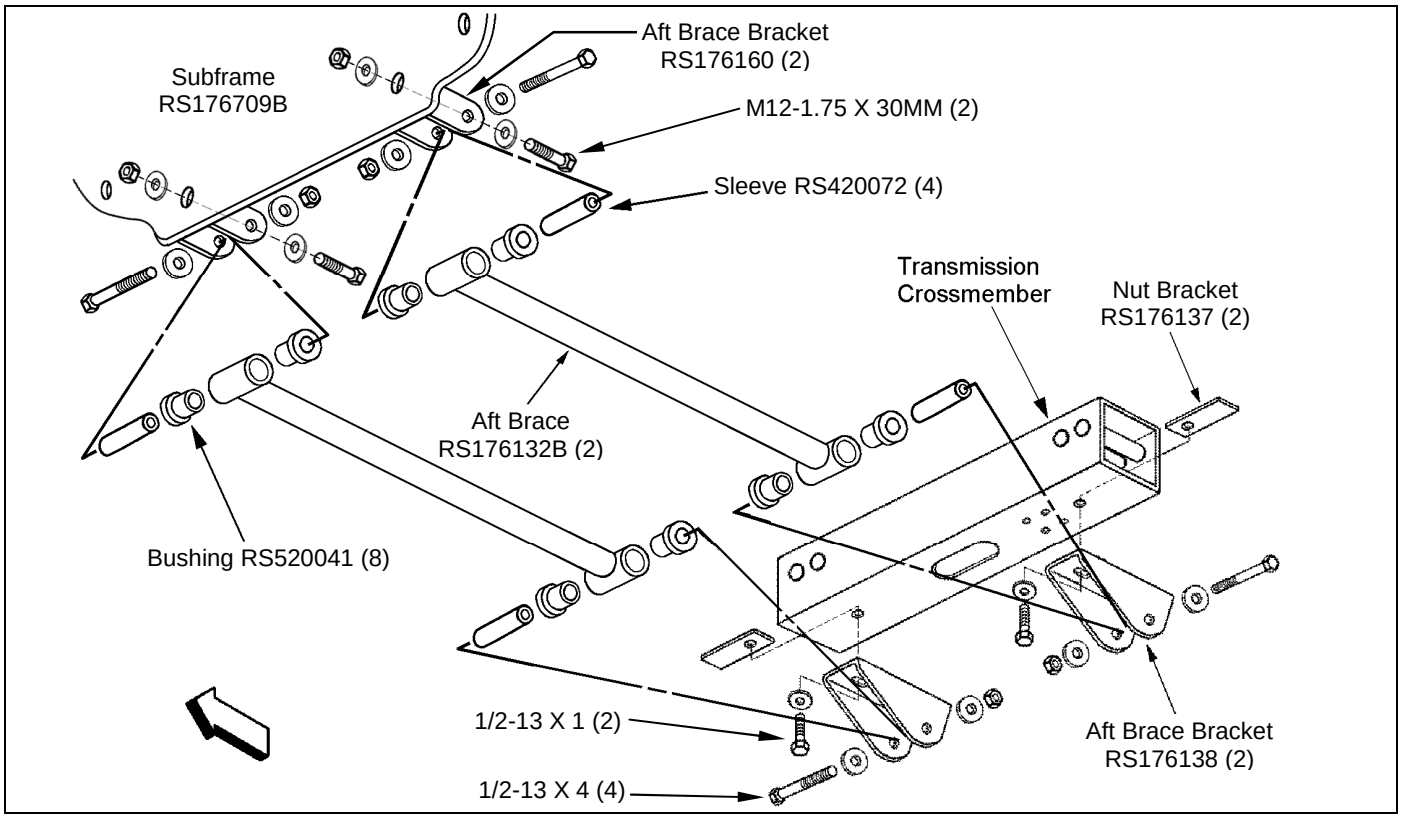

Illustration 14

AFT BRACE INSTALLATION

1) ☐ Using a silicon spray, lubricate two bushings RS520041 and one sleeve RS420072 from kit RS860474. Press the bushings and sleeve into aft brace RS176132B as shown in Illustration 14.

2) ☐ Repeat step 1 to install the rest of the bushings and sleeves.

3) ☐ Loosely attach the aft braces to previously installed brackets on subframe RS176709B with the hardware from kit RS860474. See Illustration 14.

NOTE: Both aft braces should angle slightly outward from front to rear.

4) ☐ If applicable, remove the transfer case skid plate.

5) ☐ For 2WD vehicles, temporarily attach aft brace bracket RS176138 to the aft brace as shown in Illustration 14. Using the slotted hole in the bracket as a template mark the mounting hole location on the transmission crossmember. Drill a 1/2" hole at the marked location. Remove bracket. Repeat for other side.

6) ☐ Insert nut brackets RS176137 inside the crossmember as shown in Illustration 14. Align nut brackets over the drilled holes for 2WD vehicles and over the existing holes for 4WD vehicles.

7) ☐ Apply thread lock and insert a 1.00" bolt with washer from kit RS860474 through the slotted hole in bracket RS176138. Loosely attach bracket to crossmember by threading the bolt into the nut bracket. Repeat for other side.

8) ☐ Attach the aft braces to the installed brackets with the hardware from kit RS860474. See Illustration 14.

9) ☐ Tighten the aft brace mounting bolts to 80 FT-LBS then the bracket to crossmember and bracket to subframe bolts to 65 FT-LBS.

10) ☐ If applicable, cut the corner of the skid plate to avoid contact with the aft brace bracket. Reinstall the transfer case skid plate.

LOWER CONTROL ARM AND SHOCK ABSORBER INSTALLATION

1) ☐ Loosely attach the lower control arms to the subframe with the hardware from kit RS860546. ALL BOLTS MUST GO IN FROM FRONT OF VEHICLE! Refer back to Illustration 8.

2) ☐ Using OE nuts, loosely install shock spacer RS176714 onto shock absorber with the angled plate of spacer on top and the notches in the spacer and upper shock mount lined up. See Illustration 15a and Illustration 15b.

NOTE: Notch will face toward the frame when installed on vehicle.

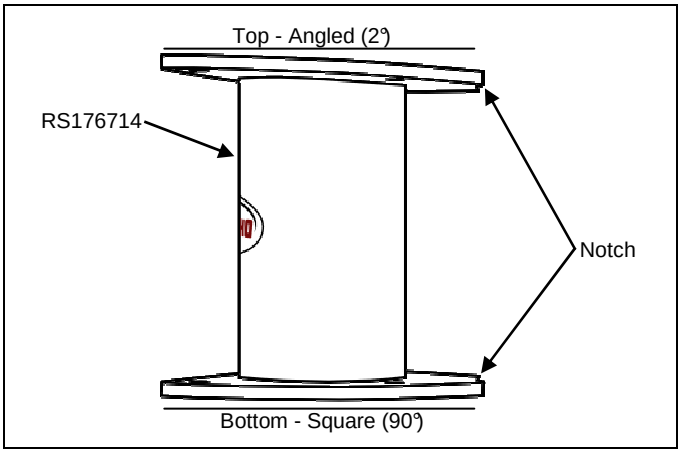

Illustration 13a

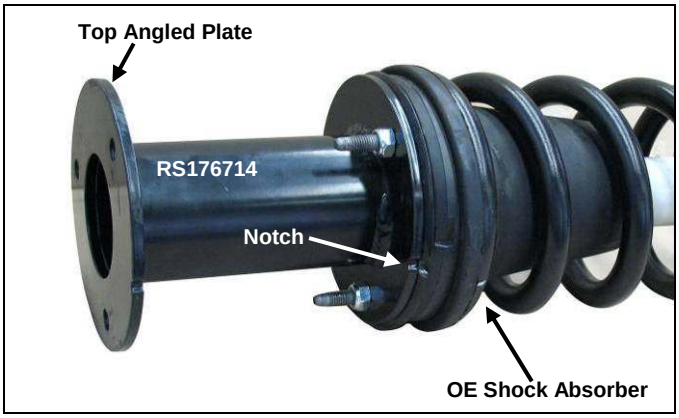

Illustration 15b

3) ☐ Loosely attach shock spacer and shock assembly to upper shock mount using hardware supplied in kit RS860740.

4) ☐ Attach the shock absorber lower mount to the lower control arm with original hardware.

5) ☐ Snug all hardware, and then tighten upper shock and shock spacer hardware to 33 ft lbs, and lower shock mounting bolts to 44 ft lbs.

HALF SHAFT & STEERING KNUCKLE INSTALLATION

1) ☐ Remove the hub, splash guard, and ABS wire and bracket from the driver side steering knuckle. Transfer parts to left steering knuckle RS176710 as shown in Illustration 16.

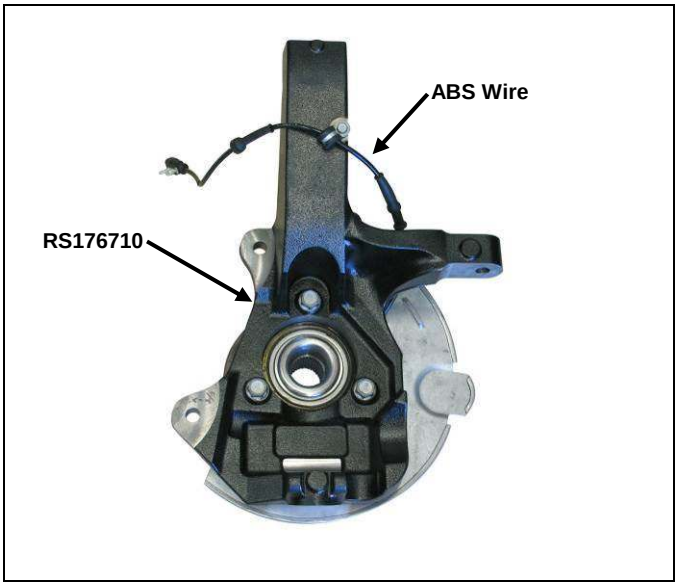

Illustration 16

2) ☐ Apply thread lock to bolts. Attach the hub, splash guard and ABS wire steering knuckle RS176710 with the original hardware. Tighten the hub mounting bolts to 133 ft. lbs. Attach ABS wire to knuckle with the loop strap from kit RS860547.

3) ☐ Loosely attach left steering knuckle RS176710 to the lower ball joint with the original hardware.

4) ☐ Insert the half shaft into the hub. Swing knuckle up to align with upper ball joint and half shaft to align with axle flange (half shaft can rest on lower control arm). Pull or pry upper control arm down to insert upper ball joint stud through knuckle and loosely attach with OE hardware. Tighten the nut on the lower ball joint stud to 74 ft. lbs., and the nut on the upper ball joint stud to 37 ft. lbs. See Illustration 17.

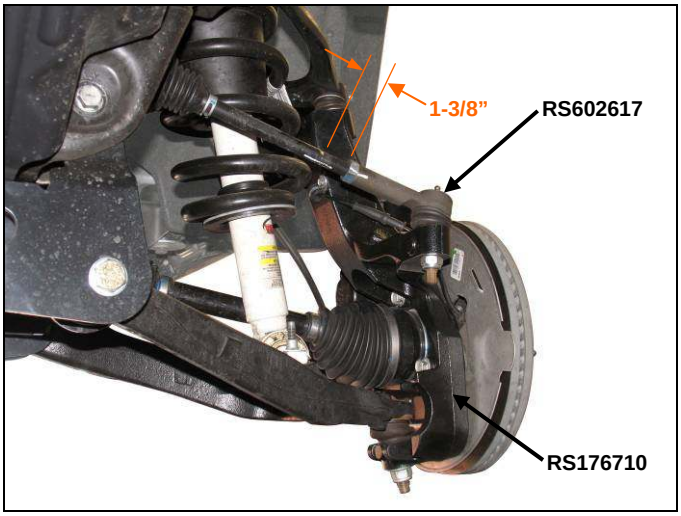

Illustration 17

5) ☐ Place axle spacer RS176235 against the driver side differential flange. Align flange marks and place the half shaft flange against the spacer. Apply thread lock to bolts and attach the half shaft to the differential with the hardware from

kit RS860176. See Illustration 18. Tighten the flange bolts to 58 ft. lbs.

Illustration 18

6) ☐ Install the half shaft washer and nut. Tighten nut to 165 ft. lbs.

7) ☐ Attach tie rod end RS602617 to steering knuckle RS176710 with the supplied nut. Tighten ball stud nut to 33 ft. lbs. Tighten jam nut to 22 ft. lbs Thread OE jam nut and tie rod end RS602617 onto OE tie rod leaving 1-3/8" of threads exposed.

8) ☐ Install the brake rotor and rotor attachment torx screw. Apply thread lock and attach the caliper to the knuckle with the original mounting bolts. Tighten the caliper mounting bolts to 129 ft. lbs.

9) ☐ Repeat steps 1 through 8 for passenger side.

BRAKE LINE DROP BRACKET INSTALLATION

1) ☐ Install driver side brake line drop bracket RS176915 to upper control arm pocket using OE and supplied ¼" hardware from kit RS860738. See Illustration 19.

2) ☐ Attach brake OE brake hose bracket to brake line drop bracket with supplied ¼" hardware from kit RS860738. Bolt head must face to the front of the vehicle to allow clearance with upper control arm. Insert ABS wire clip in brake line drop bracket and frame. See Illustration 19.

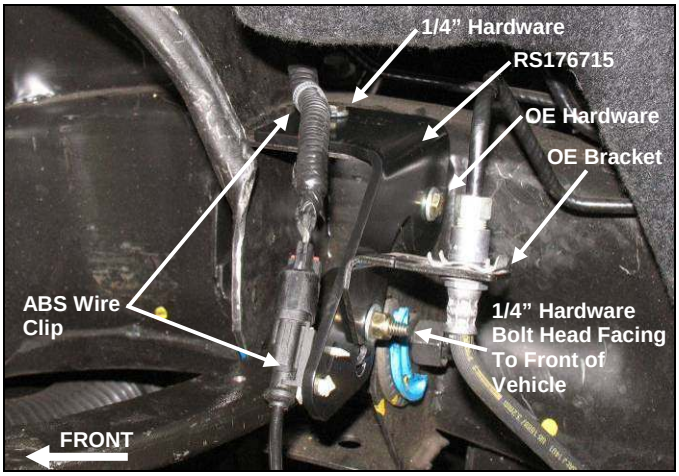

Illustration 19

3) ☐ Repeat steps 1 and 2 on passenger side with brake line drop bracket RS176916

SWAY BAR DROP BRACKET INSTALLATION

1) ☐ Using the washers and shorter M10x30mm bolts from hardware kit RS860547, Loosely attach the sway bar drop brackets RS176579 to the frame rails at the original sway bar location. See Illustration 20

2) ☐ Using the washers and nuts from hardware kit RS860547, and OE bolts, loosely attach the sway bar to drop brackets RS176579.

Illustration 20

3) ☐ Loosely attach the sway bar end links to the lower control arms with the original end link assemblies.

NOTE: If unable to attach sway bar to lower control arm, wait until the vehicle is on the ground at ride height.

4) ☐ Tighten all sway bar drop bracket mounting bolts to 45 ft. lbs. Do not tighten sway bar end links to lower control arm.

LOWER VEHICLE

1) ☐ Install front wheels and lower vehicle to ground. If reinstalling OE wheels use ¼" wheel spacers RS176737 (see important note M). Tighten the lug nuts to 140 ft. lbs.

2) ☐ Tighten the lower control arm pivot bolts to 107 ft. lbs. Tighten the sway bar end link bolts to 22 ft. lbs.

REAR SUSPENSION

ADD-A-LEAF & RISER BLOCK INSTALLATION

1) ☐ Chock front wheels. Raise the rear of the vehicle and support the frame with jack stands. Remove the rear wheels.

2) ☐ Separate four ABS wire clips from frame and axle. Remove clips from wires.

3) ☐ Separate ABS sensors from axle by removing torx

bolts and sliding sensor out of axle. The passenger side brake hose bracket may need to me separated from the parking brake bracket to remove passenger side ABS sensor.

4) ☐ Separate top and bottom halves of brake hose bracket at top of differential. See Illustration 21.

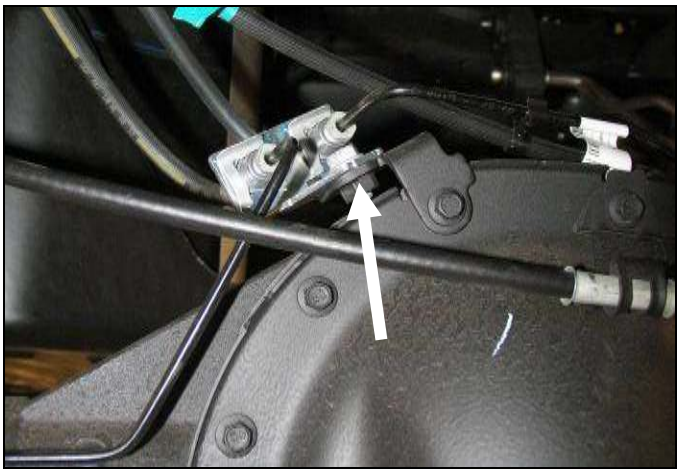

Illustration 21

5) ☐ Remove both fore and aft parking brake hanger brackets from frame. See Illustration 22

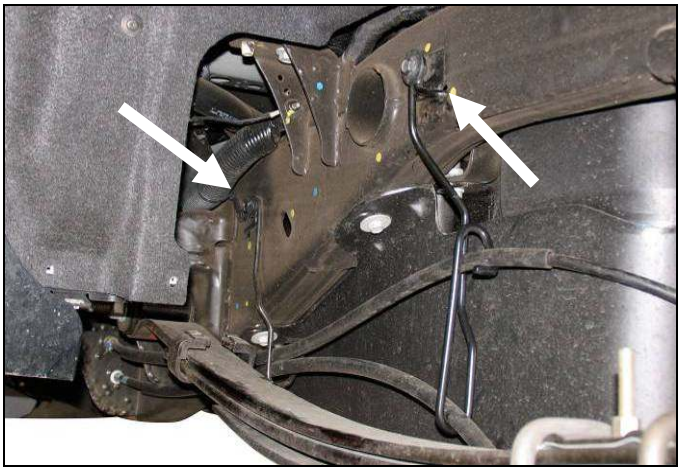

Illustration 22

6) ☐ Support the rear axle assembly with a floor jack. Remove both rear shock absorbers. Do not reuse OEM shock absorbers.

7) ☐ With the axle still being supported, remove the anchor plate, U-bolts, and spacer from driver side. See Illustration 23.

8) ☐ Loosen passenger side U-bolt nuts two turns each.

⚠ WARNING: Do not allow the axle to hang by any hoses or ABS cables. You could damage the hoses or ABS cables, without this damage being visible to you, resulting in sudden and unexpected failure of a hose or ABS system, and an accident.

9) ☐ Carefully lower the rear axle and remove the original riser block. Do not allow the axle to hang by any hoses or cables.

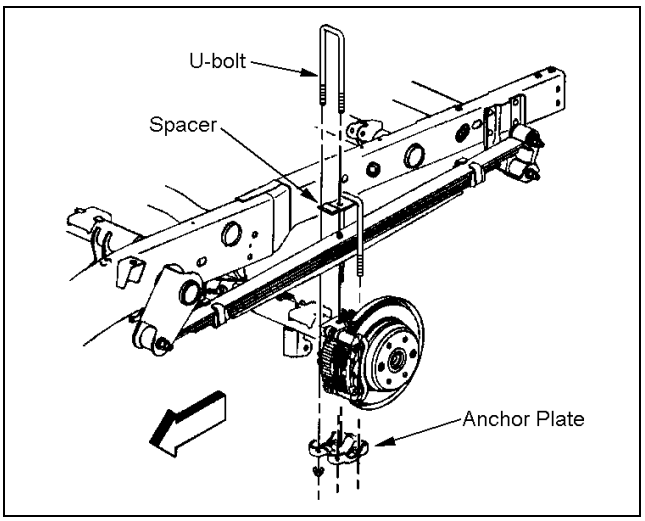

Illustration 23

10) ☐ Clamp the spring assembly securely together with two C-clamps as shown in Illustration 24.

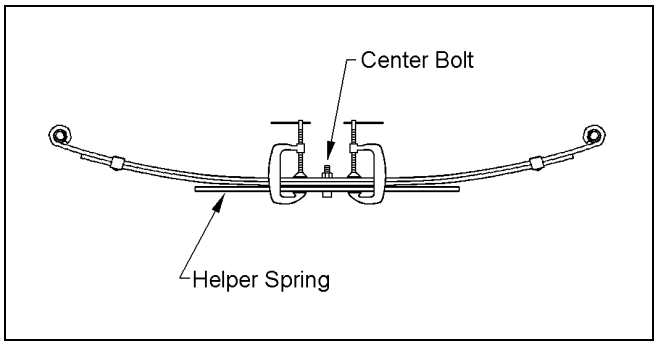

Illustration 24

11) ☐ Loosen the nut and remove the center bolt. If necessary, hold the head of the center bolt with locking pliers. Do not remove the spring clips.

12) ☐ Carefully remove the C-clamps and set the helper spring aside.

13) ☐ Apply a small amount of grease to the top ends of Rancho Add-A-Leaf RS331.

14) ☐ Place the Add-A-Leaf under the spring pack and reinstall the helper spring. Install a leaf shim RS176719 on each side of helper spring. Temporarily secure the assembly together with a 3/8" x 7.5" bolt and nut from kit RS860185. Install a C-clamp on each side of the bolt. See Illustration 25.

NOTE: The 3/8" bolt will keep the center holes aligned as the spring pack is compressed.

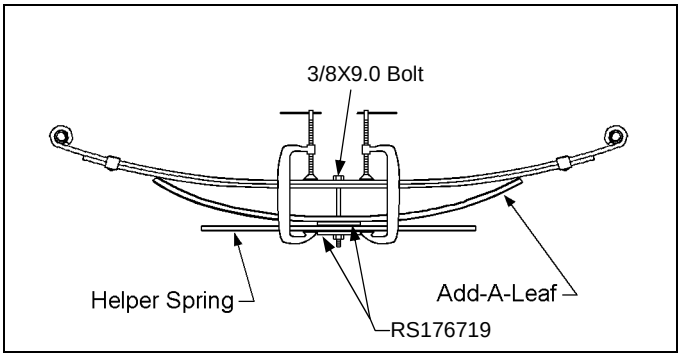

Illustration 25

15) ☐ Alternating between C-clamps, compress the spring pack to within 4 inches. Install nylon safety straps as shown in Illustration 26.

16) ☐ Carefully, without disturbing the C-clamps, remove the 3/8" bolt. Install the center bolt and nut from kit 860410. See Illustration 26. Do not compress the spring with the center bolt.

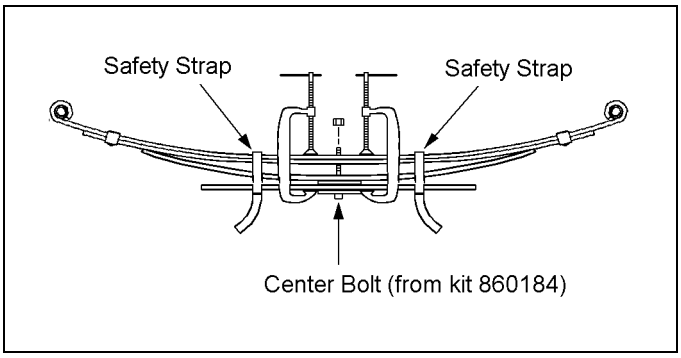

Illustration 26

17) ☐ Tighten the C-clamps to fully compress the spring assembly. Once compressed, tighten the center bolt to 25 ft. lbs. If necessary, hold the head of the center bolt with locking pliers.

18) ☐ Remove the C-clamps and straps.

19) ☐ Insert a block pin from kit RS8051 into the hole in the axle pad. Place the new riser block RS15080 on the axle pad with the taller end of the block in the rear and the top hole offset to the front. See Illustration 27.

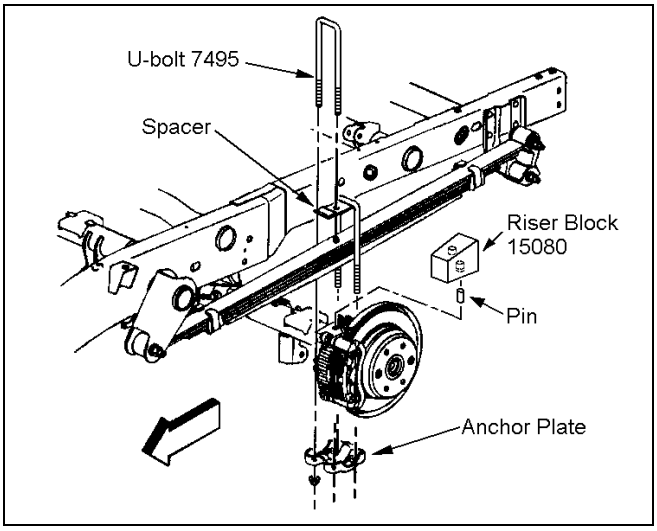

Illustration 27

NOTE: Ignore the "up" stamped on the riser block for this application. All block imprinting faces downward.

20) ☐ Raise the axle assembly until the riser block contacts the helper spring. Be sure to align the hole in the block with the head of the center bolt.

NOTE: If necessary, CAREFULLY loosen the passenger side u-bolt nuts another 1-2 turns. Do not allow axle to twist or sway.

21) ☐ Reinstall the U-bolt spacer on top of the leaf spring. Attach the spring to the axle with the NEW U-bolts RS740014, original anchor plate, and hardware from kit RS8102. Snug the nuts down but do not tighten.

22) ☐ Repeat steps 3 through 16 for the other side.

23) ☐ Cross tighten the U-bolt nuts evenly to 89 ft. lbs. Recheck the torque on the center bolt.

24) Install new Rancho shock absorbers or relocator kit RS6202. Tighten hardware to 85 ft. lbs.

BUMP STOP SPACER INSTALLATION

1) ☐ Remove the bolt holding the bump stop to the frame bracket. Remove the bump stop.

2) ☐ Place bump stop spacer RS176477 against frame bracket. Attach original bump stop to spacer with the 10mm hardware from kit RS860582. See Illustration 28

Illustration 28

3) ☐ Repeat steps 1 and 2 for the other side.

BRAKE LINE BRACKET INSTALLATION

1) ☐ Remove the lower half of the brake hose bracket from top of differential housing. Attach the new brake line bracket RS170014 to the rear differential with the OE hardware. See Illustration 29.

2) ☐ Carefully reshape the OE hard brake lines and twist the plastic brake line retainers on the axle to allow OE brake line bracket to attach to RS170014. Attach the upper brake hose bracket to the top of bracket RS170014 using the 5/16" hardware from kit RS860569.

NOTE: On some models, brake line bracket RS170014 may need to be bent up and back to connect OE brake bracket

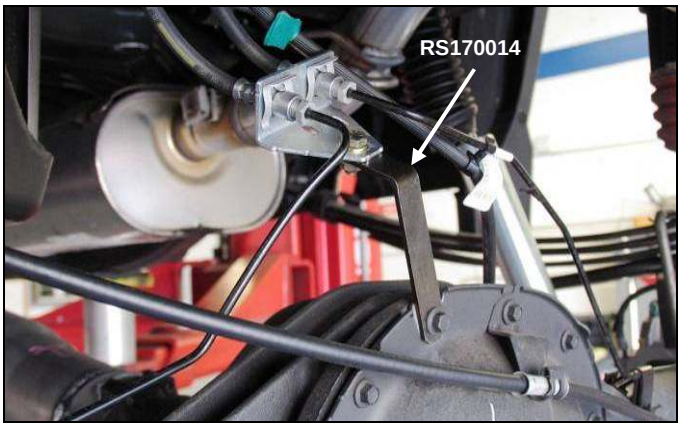

Illustration 29

3) ☐ Remove the driver side (lower) parking brake cable from the aft OE parking brake hanger wire.

4) ☐ Reinstall both fore and aft OE parking brake hanger wires. See Illustration 30

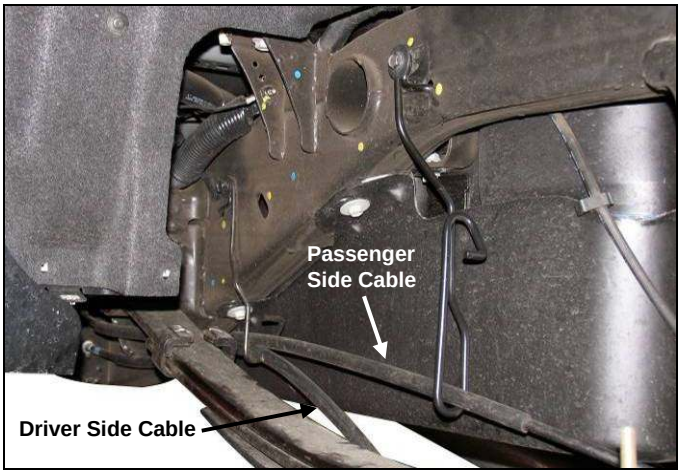

Illustration 30

5) ☐ Install rear wheels and lower vehicle to ground. Tighten lug nuts to 140 ft. lbs.

FINAL CHECKS & ADJUSTMENTS

6) ☐ Turn the front wheels completely left then right. Verify adequate tire, wheel, and brake hose clearance. Inspect steering and suspension for tightness and proper operation.

7) ☐ With the suspension at maximum extension (full droop), inspect and rotate all axles and driveshafts. Check for binding and proper slip yoke insertion. The slip yoke should be inserted a minimum of one inch into the transfer case and/or transmission.

8) ☐ Ensure that the vehicle brake system operates correctly. If new brake hoses were installed, verify that each hose allows for full suspension movement.

9) ☐ Readjust headlamps. Have vehicle Aligned at a certified alignment facility.

Recommended Alignment Specifications

Caster (degrees): 4.5° ± 1.0°

Camber (degrees): 0° - neg .3°

Sum Toe In (degrees): .1° ± .2°

Please retain this publication for future reference. See Important Note Q.

⚠ WARNING: Original factory equipped (OE) wheels and spare 17" and up with OE tires require the use of ¼" wheel spacer RS176737 when used on the front of the vehicle. Do not use spacers on the rear wheels. Keep spacers and instructions in vehicle for use with OE spare.